REMARKS

Rejections Addressed

Claims 1-13 are pending in the application. Claims 7-13 are newly added claims. Claims 1 and 7 are the independent claims.

The Office Action rejected Claims 1 -6 under 35 U.S.C. 103(a) as being unpatentable over Yiannoulos (U.S. 5,982,318) in view of Xie (U.S. 5,874,994) and Xiao (U.S. 6,137,432) Applicant respectfully disagrees with this rejections.

The Office Action indicated that Yiannoulos does not teach having two color pixels selected amount the first to third color pixels, but that one of ordinary skill in the art would know that placing a Bayer filter, as taught in Xie, in combination with the invention of Yiannoulos would allow for the selection of two of the three color pixels. Applicant respectfully disagrees.

N number of column pixel arrays, each having two different color pixels selected from the first to third color pixel. The present invention has a pixel array of M (row line) X N (column line) color pixels. There are N number of column pixels, each with two different color pixels selected from a first to third color pixel (i.e., red, green, and black color pixels). None of the Examiner's references teach this feature.

The Examiner combines Yiannoulos with the Bayer filter of Xie to create this feature. However, this combination is not proper. Among other features, Yiannoulos does not teach a selection block. (See, e.g., FIGURE 6 of Yiannoulos.) Thus, in Yiannoulos, each reference signal, which is output from the ramp generators 120, must be directly input to the output circuit 34. In addition, each column pixel array is directly connected to one output circuit 34. Thus, if each column pixel array has two different color pixels, the output circuit 34 cannot output predicted data (e.g., 48). If the Bayer filter of Xie is combined with the Yiannoulos invention,

there should be means for gathering plural data according to each color pixel between a pixel array and the output circuit 34 of <u>Yiannoulos</u>.

Thus, the placing of the Bayer filter of <u>Xie</u> in combination with the <u>Yiannoulos</u> invention does not render the invention of amended Claims 1 and newly added Claim 7.

<u>Converting an analog image data into digital image data according to color characteristics and an image data characteristic.</u> In the present invention, each analog reference voltage is generated based on image data characteristics. (See, e.g., page 7, lines 15-20 of the specification.) Thus, it is possible for the CMOS image sensor to output digital image data based on image data characteristics. None of the references cited by the Office Action include this feature. In particular, in the present invention, each analog reference voltage has a different value with a different decline rate based on the image data characteristics for controlling the digital image data (e.g., controlling a color tone of a picture). Each of the first to third analog reference voltages can be controlled as a different value, with a different decline rate when the image data characteristics are not good (e.g., too dark or too bright), and thus the CMOS image sensor outputs a high-quality digital image data corresponding to the input image.

Amended Claim 1 and newly added Claim 7 both include the features of an **<u>N number of column pixel arrays, each having two different color pixels selected from the first to third color pixel</u>** and **<u>converting an analog image into a digital image according to color characteristics and an image data characteristic</u>**.

For the reasons set forth above, Applicant believes that independent claims 1 and 7 are allowable. Dependent claims 2-6 and 8-13 incorporate the features of independent claims 1 or 6, and are thus also allowable. In addition, claims 1, 2, 4, and 6 have been amended to eliminate the "means for" language, and are thus no longer interpretable under 35 U.S.C. 112, paragraph 6.

Applicants believe the objections and rejections in the Office Action have been addressed and that the application is now in condition for allowance. The Examiner is invited to contact the undersigned by telephone should the Examiner believe that personal communication will expedite prosecution of this application.

Respectfully submitted,

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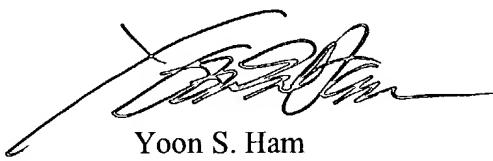
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